

Academy



California Academy of Sciences – Golden Gate Park

December 1997/January 1998

Research Profile: Herpetology

Coming Soon:
EARTHQUAKE!

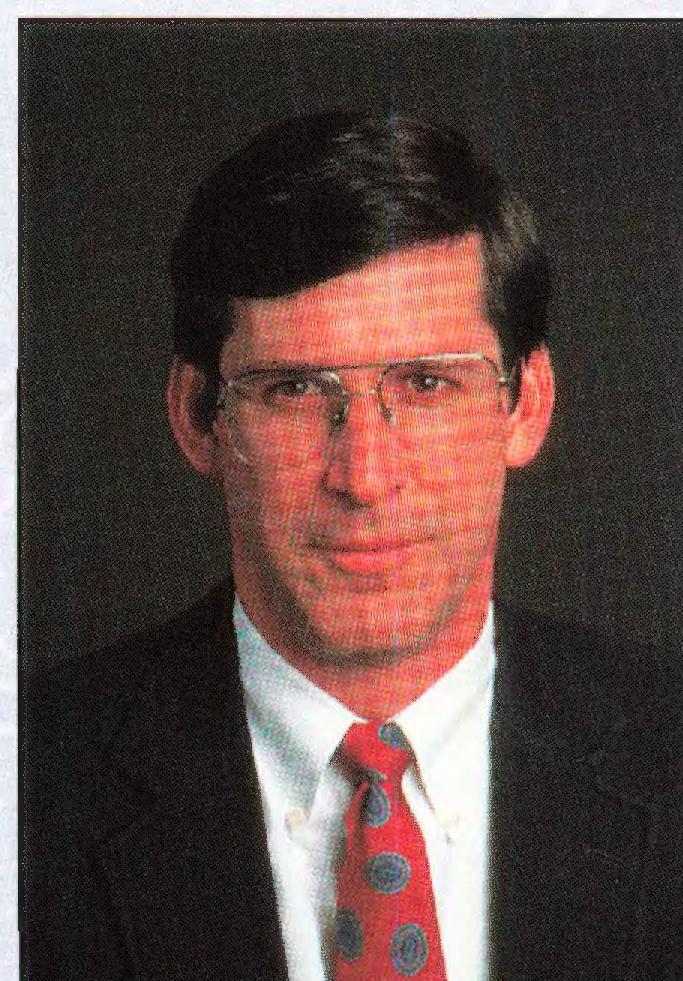
Science at
Shoreline

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To explore and explain the natural world

STEINHART AQUARIUM • MORRISON PLANETARIUM • NATURAL HISTORY MUSEUM



Dr. Patrick Kocielek

Executive Director's Message

On Wednesday, October 15, a delegation of San Franciscans descended on our nation's capitol. The occasion was the Chevron Education Award for Best Classroom practices funded by Chevron Corporation and presented by the California Academy of Sciences in cooperation with the National Science Foundation. Led by the Academy's Chairman and Curator of Education Sam Taylor and President of Chevron Products Company David J. O'Reilly, the Best Classroom Practices awards showed the country the value of a collaboration between the business and education communities all in the name of science and technology development.

The purpose of these awards is to inspire educators and their students to develop innovative teaching practices to spark a child's interest in math and science. Ultimately, the goal is twofold: from an educator's standpoint the hope is to inspire a child to pursue the sciences, while the business community benefits by cultivating the inquisitive minds of future scientists, geologists and engineers. The result is a classic win-win situation for everyone involved.

In a climate where our young people are distracted from pursuing their instincts to enjoy math and science, efforts like the Best Classroom Practices give hope to the future of science literacy. I am proud of the Academy's participation in these awards and particularly delighted with our Education Department's leadership role.

Science at Shoreline

A unique program has been born out of a partnership between the California Academy of Sciences, the ALZA Corporation, Crittenden Middle School and the City of Mountain View. The result is "Science at Shoreline" with several wonderful outcomes: new classes for the students at Crittenden, an interpretive program at Shoreline and a presence for the Academy of Sciences in the South Bay.

The Academy's role in this effort is a vital one: develop and guide the program's curriculum. Sam Taylor, Chairman and Curator of the Education Department will help oversee Crittenden science teachers as they instruct their students on natural history, wildlife diversity and avian biology of Shoreline, which is a former landfill. Under the supervision and mentoring by Academy docents and ALZA volunteers, the Crittenden students will act as interpreters for other local school students. According to Taylor this program benefits all who come into contact with it. "Science at Shoreline enables the educators of the Academy to apply their expertise in the natural history of California and expand our audiences to the South Bay—and beyond—at the same time."

News from the Chairman

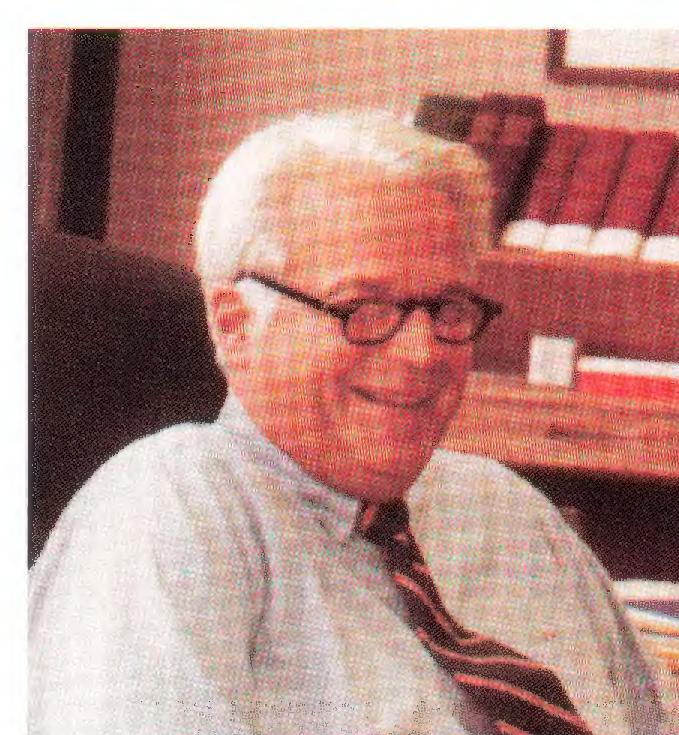
On November 3, Richard Bingham, Chairman of the California Academy of Sciences, made an important and exciting announcement. Longtime Academy supporter, and loyal member, Phyllis C. Wattis has donated \$10 million dollars to the Academy for the construction of new buildings after a final decision is made on a permanent home.

While the trustees continue to study the cost and feasibility of staying in or moving from Golden Gate Park, Mrs. Wattis' gift reflects her support of the Academy's future wherever it may be. "She was very clear that the contribution is for our use whether the Academy remains in Golden Gate Park or relocates to another area of the City," said Bingham.

Phyllis Wattis' contributions have been vital to this institution ranging from Wattis Hall to the one million dollar endowment of the Traditional Arts program in 1986. The Academy is grateful for her continued extraordinary generosity.

Spotlight on Hamilton W. Budge

After four years as chairman of the Academy Council and eight years as an Academy trustee, Hamilton (Whit) Budge stepped down at the end of October of this year. The Academy Council was formed in 1985 to broaden the Academy's contact with the community. Council members representing a cross-section of occupations, interests and geographic locations provide counsel to the Academy on a wide range of issues. Whit Budge provided strong and insightful leadership to the Council and we will miss his guidance. We appreciate his years of support, though, and wish him well.



Hamilton (Whit) Budge



HUNTERS OF THE SKY

An exhibit about birds of prey

February 7 through May 3, 1998

For thousands of years, raptors (or birds of prey) have maintained a hold on the human imagination unmatched by any other group of animals. Whether revered as divine messengers or reviled as scavengers and bloodthirsty killers, these birds have captured our attention in a way that goes beyond the mere facts of biology.



A California Condor *Choquyens* is preserved in all its majesty.

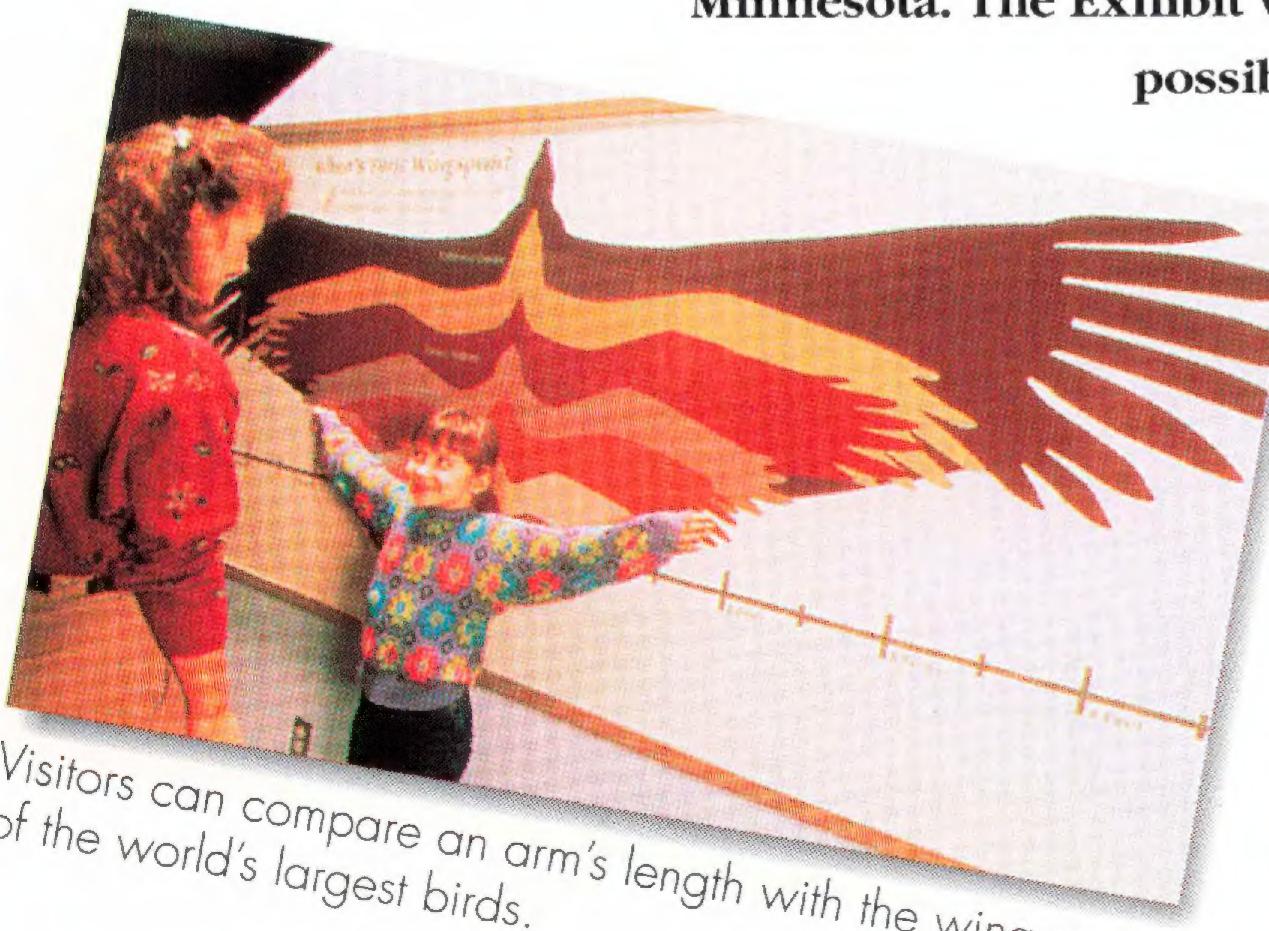
Now, in a comprehensive exhibit with specimens, models, artifacts and interactive components, these hunters of the sky will be presented in a format that shows how amazing they are, both physically and as cultural icons.

Visitors can compare an arm's length to the wingspan of some of the world's largest birds and test out the laws of physics that allow them to fly. One area of the exhibit looks at how some birds of prey have adapted to urban settings, while another engages young ones with feathers to touch and other interactive activities.

Beginning February 7, ***Hunters of the Sky*** will transform the 6,000 square-foot Wattis Hall into an educational experience for visitors of all ages.

Hunters of the Sky was produced by The Science Museum of Minnesota. The Exhibit was made

possible with funds provided by the National Science Foundation and the National Endowment for the Humanities.



Visitors can compare an arm's length with the wingspan of the world's largest birds.

Coming Soon: EARTHQUAKE!

Experience San Francisco's original rock 'n' roll at EARTHQUAKE!, soon to be the Academy's newest attraction. Says Exhibit Project Coordinator Peter Dunne, "A lot of people don't believe things till they feel them. Well, this should do the trick."

The main attraction is a multimedia theater that lets visitors experience several simulated earthquakes with three shake tables. The presentation is 7-10 minutes long and includes survivor stories, actual video footage, recorded sounds of real earthquakes and many more special effects.

Learn the fundamentals of what an earthquake is and how it occurs. Interactive components in a variety of different media will be at different locations throughout the exhibit. Highlights include a *3-D Earthquake Preparedness Computer Interactive* that takes place inside a San Francisco Victorian, a *Convection Tank* that gives a liquid demonstration of heat movement within the earth, and *Liquification*, a visitor-activated mechanism showing why those houses in the Marina sank in '89.

This exhibit is geared toward inspiring the visitor to learn more about the mechanics and effects of earthquakes. It is also a tool to teach what one can do to prepare for such an event. Be among the first to visit EARTHQUAKE!, sure to become a San Francisco landmark of its own.



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Herpetology:

the study of evolutionary biology in reptiles and amphibians

The Academy's Department of Herpetology is a prime example of the overwhelming excellence which characterizes our research division. This department has distinguished itself as one of the top five of its kind in the nation, with a collection that is the seventh largest in the world.

What you may not know is that the Academy's staff herpetologists travel to the farthest corners of the globe, exploring remote areas, gathering specimens and describing new species. From 1990 to the present Chair and Curator Dr. Robert C. Drewes and Senior Collections Manager Jens V. Vindum have been conducting a reptile and amphibian survey of the Impenetrable Forest in Uganda. And as part of a joint project with San Francisco State University, Drewes and Vindum plan to travel to Equatorial Guinea's Bioko Island to determine its biodiversity in May of 1998. Curator Dr. Alan E. Leviton continues to study the herpetofauna of southwest Asia.

Another major source of excitement is the Department of Herpetology's contract with the California Department of Fish and Game, in an important project to revise distribution maps of reptiles and amphibians in California, the most diverse state in the United States. The Department was the first in the world to completely computerize its collections on PC's, and now provides a combined database network of collections from 17 institutions worldwide, from the National Museum of Natural History of Paraguay to Yale University. Web surfers can visit these collections through the Academy website at

Profile: Dr. Joseph B. Slowinski

The Academy is proud to introduce Joseph B. Slowinski, Ph.D., the newest addition to our Herpetology Department. As Assistant Curator of Herpetology, Dr. Slowinski will continue his research on phylogenetics, specializing in relationships and evolution of snakes of the family Elapidae (cobras).

Dr. Slowinski has just returned from Burma, where he collected specimens of reptiles and amphibians and studied the species of cobras in that region. He also studies theoretical issues in phylogenetic analysis and the dynamics of biological diversification. Dr. Slowinski received his doctorate from the University of Miami. He joined us from the Department of Biological Sciences at Southeastern Louisiana University, where he was an Instructor and Research Associate.

www.calacademy.org. The Department is currently in the process of upgrading its collections, thanks to a \$90,000 grant from the National Science Foundation.

In 1960, Herpetology was the department responsible for the first biochemical research at the Academy. Members of the Department were among the first to support the installation of the Osher Molecular Laboratory, which resides in space willingly released by Herpetology. The Department staff is now comprised of three curators, a collections manager, a department secretary and three part-time curatorial assistants.



PHOTO: MIKE MCRAE

Dr. Robert Drewes collecting specimens in the Impenetrable Forest of Uganda.

Through the years, the Department of Herpetology has contributed to the scientific community with academic success and creativity.

Metaphysics and the Origin of Species

Systematic Biology has undergone some revolutionary changes during the last thirty years or so. These include some ideas about the philosophy of the subject that have been proposed by Michael Ghiselin, Senior Research Fellow in the Academy's Department of Invertebrate Zoology and Geology, and Chair of its Center for the History and Philosophy of Science.

Dr. Ghiselin reviews these contributions and the philosophy of classification generally in his latest book, *Metaphysics and the Origin of Species*, which was published by the State University of New York Press in July. The core idea is that contrary to what seems intuitively obvious, biological species are not kinds of organisms. Rather, like baseball teams and armies, they are wholes composed of organisms. This idea makes a lot more sense when we realize that kinds are abstractions. It is hard to imagine how an abstraction could evolve or become extinct.

It turns out that all sorts of groups, including the ones that are branches of phylogenetic trees, can be interpreted from the same point of view. The take-home message is that the basic goal of biology is historical explanation, something that helps to underscore the importance of the kind of research that goes on at the Academy.

Join us for the 1998 Friends Appreciation Dinner

Thursday, February 5th



PHOTO: DONG INN

Longtime Friends of the Academy Ann and Peter Costigan with Senior Curator of Botany, Dr. Frank Almeda and his wife Mary Beth.

Hosted by the Academy's Board of Trustees, the annual Friends Dinner honors Academy donors who contribute \$1,000 or more to the Annual Fund. In keeping with tradition, guests will be treated to a presentation by an Academy scientist and to a preview of the Academy's first permanent exhibit since *Life Through Time, "Earthquake!"* San Francisco's finest, Dan McCall Associates, will cater the preview reception and dinner.

Members can still be part of this special occasion by joining the Friends of the Academy with a gift of \$1,000 or more. If you are a current Curator, Director or President's

Circle donor, you can become a Friend by making an additional contribution in the amount that would upgrade your membership to the Friends' Circle. Your membership will automatically be extended one year from the date of your additional gift, giving you extra free months of Academy benefits.

For more information about joining the Friends of the Academy, please call Sally Donnell, Senior Development Officer, at (415) 750-7280.

Our many thanks to the following Friends of the Academy for their generous support.*

Kenneth Alan Baber
Frank and Denise Balm
Mr. and Mrs. Hamilton W. Budge
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Shawn and Brook Byers
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Mr. and Mrs. William Wilson III
Mr. and Mrs. Paul M. Wythes
Dr. Adrienne Zihlman and
Dr. Jerold Lowenstein

* (Represents contributions received between July 1, 1997 and October 3, 1997.)

Outstanding Volunteers

Meet Barbara and Lowell Jennings, a husband and wife who share the desire to give something back to the Academy.

Dr. Lowell Jennings joined us in 1989 after retiring from a long career as a psychologist. Unsure of what he might do as a volunteer, he was open to suggestions. He said only that he needed to learn and hoped to contribute. Both of these desires were fulfilled when he became a volunteer at the Tidepool. Lowell says he believes that visitors leave the Tidepool with a new respect for the fragile life forms found there.

Barbara followed suit in 1991, with many years of Special Education behind her. She was seeking intellectual stimulation, and found the perfect match at the Academy's Biodiversity Resource Center. She was soon assisting a wide range of visitors, from students to scholars, to access information on the importance of biodiversity.

Each of our featured volunteers spends two mornings a week helping the Academy and its visitors, a truly generous gift. Won't you consider joining them? The Tidepool is in particular need of volunteer support at this time, and you can make the difference by calling (415) 750-7154 to request an application.

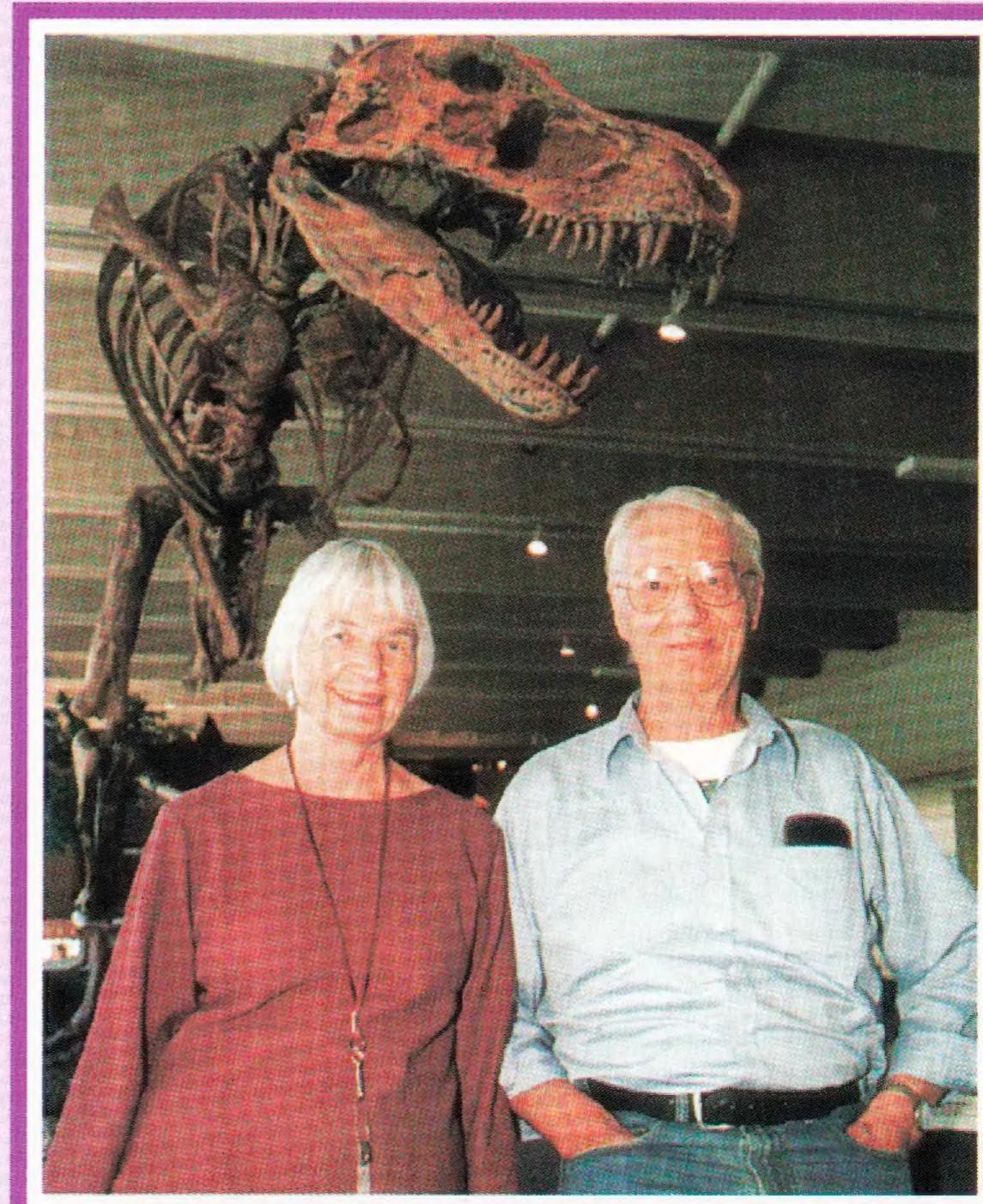


PHOTO: DONG INN

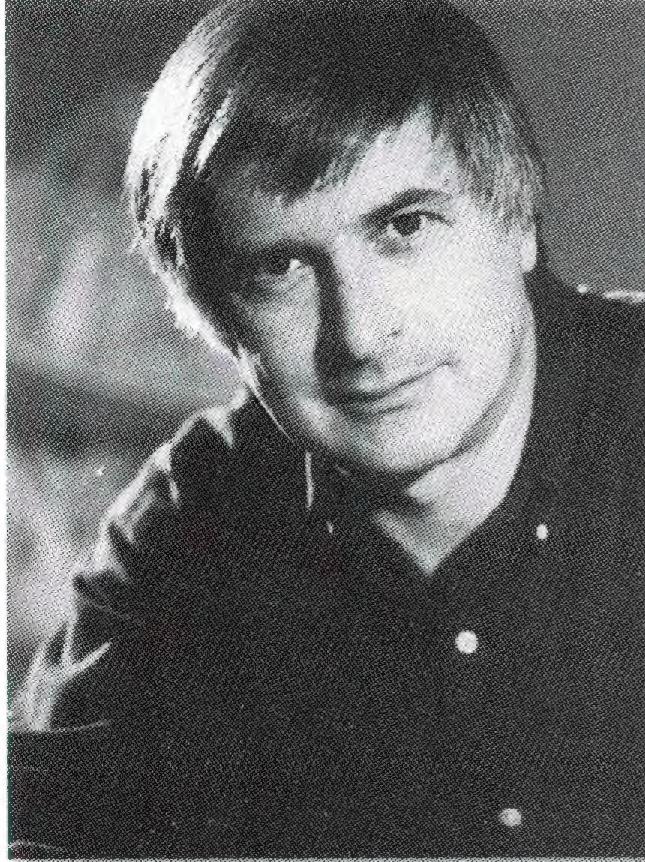
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December

The Search for Extraterrestrials

with Dr. Seth Shostak, Scientist, SETI Institute

Could there be intelligent life elsewhere in the universe? Other planets and moons in our solar system might have inhabitants, but if so they are probably smaller than a pinhead. However, recent research indicates that hundreds of billions of other planets may be scattered throughout the vast starfields of the Milky Way. How many of these other worlds sport life able to send messages into space, or perhaps to travel between the stars?



Dr. Seth Shostak, Scientist,
SETI Institute

In 1995, an ambitious scientific effort to search out distant civilizations by eavesdropping on their radio traffic got underway. Over the next five years, this effort, known as project Phoenix, will use sophisticated digital receivers on large telescopes to probe the vicinities of nearby stars for a faint radio signal that would tell us we are not alone.

But what are the chances of success? Is Project Phoenix aiming its antennas at the most likely sites for life? Even if alien life is common, is any of it intelligent? And finally, suppose Project Phoenix succeeds: what then?

Shostak is the Public Programs Scientist at the SETI Institute, in Mountain View, California. For much of his career, he conducted radio astronomy research on galaxies, and has published over fifty papers in professional journals.

Wednesday, December 10 at 2 pm & 7:30 pm (auditorium)

Members' Holiday Shopping Evening

Wednesday, December 10 from 6 to 9 pm

Join us before the 7:30 pm evening lecture for shopping, light refreshments and some traditional piano music. You'll have the opportunity to purchase ethnic art gifts, fabulous jewelry, books and more without the crowds, and also receive a special members **discount of 15 percent** on all purchases in the Academy Store (usually 10 percent).

Come share the treasures as the Academy's staff presents their exquisite handmade jewelry, candles, cards, ornaments, scarves and more to enhance your holiday shopping pleasure. If you're one of those people that loves to give something special in the way of handcrafted gifts, this is the place to shop.

We look forward to welcoming all our members on the 10th, and many thanks for your support of the Academy this year. In this count-your-blessings season we wish the best to all our members . . . and a happy and healthy year in 1998!

January

Underwater World — Palau & the Philippines

with Dr. Gary Williams, Curator IZ&G



PHOTO: G.C. WILLIAMS

Anemone fish

The coral reefs of Palau and the Philippines offer the marine biologist and SCUBA diver some of the richest biodiversity in all the world's oceans. Separated by about 600 miles in the western

Pacific Ocean, the coral reefs of the Palau and Philippines islands show significant differences in geology, biotic communities, species composition and abundance. The Rock Islands of Palau have a unique beauty and contain the renowned Jellyfish Lakes, while the Chocolate Hills of the southern Philippines comprise a striking landscape of ancient uplifted coral reefs.

Dr. Gary Williams is a Curator and Chair of the Academy's Department of Invertebrate Zoology and Geology. Educated as a marine biologist, his research program is currently focused on coral reefs of the western Pacific. Dr. Williams will present a slide-illustrated lecture on the rich diversity of marine life in the Palau and Philippine archipelagos, two of the most interesting and exciting regions for marine biological research.

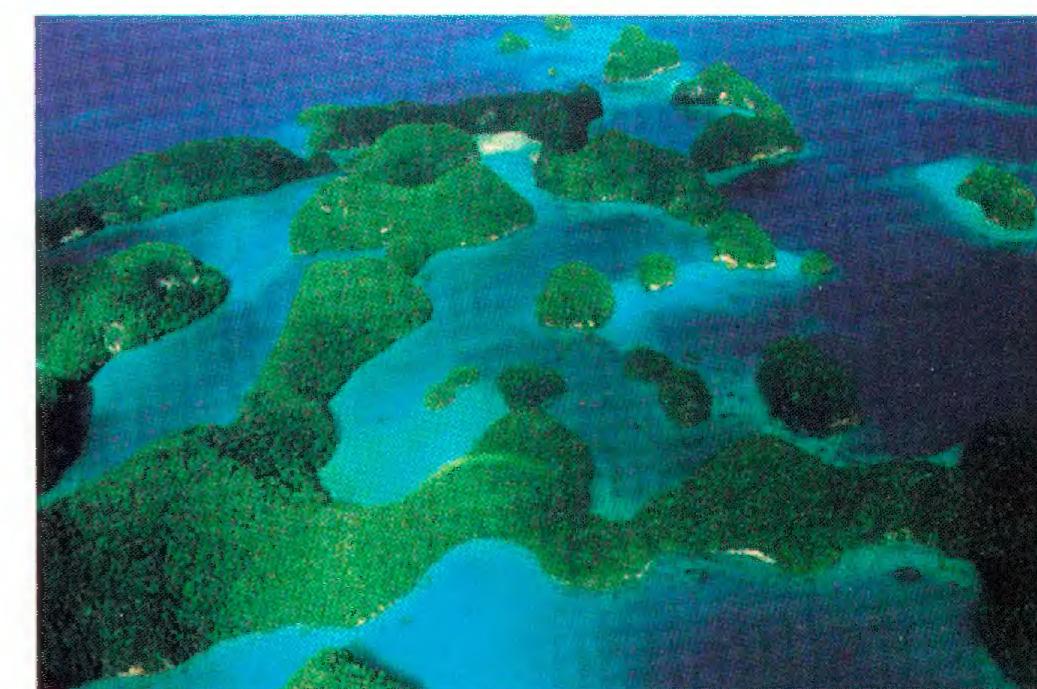


PHOTO: G.C. WILLIAMS

Rock Islands, Palau-Philippines

Tuesday, January

13 at 2 pm & 7:30 pm (auditorium)

(please note that this is a Tuesday instead of Wednesday)

Upcoming Lectures

February 11

On Two Feet: The Origins and Consequences of the Evolution of Human Bipedal Locomotion with Nina Jablonski, Irvine Chair of Anthropology.

March 11

From Wolf to Dog with biologist Pat Tucker and Bruce Weide, Documentary Filmmaker

Members meetings are a benefit of membership. Please present your membership card at both the front entrance and the auditorium. Members' guests can purchase tickets for \$10 each for adults and \$5 for children at the Membership Booth at the main Academy entrance. Please note: Only the main entrance will be open for the evening lecture.

Special Lectures

The Sixth Extinction

with Niles Eldredge

Evolutionary biologist Niles Eldredge of the American Museum of Natural History will explore who we are as *Homo sapiens*, how we fit into the natural world today, and what lies in store for the future. Eldredge will trace the human ecological story from three million years ago and reveal the growing importance of culture over biological adaptation. Ten thousand years ago the agricultural revolution forever changed the human ecological "niche," triggering an enormous expansion of human population that is still underway. This population explosion has in turn triggered a monumental "sixth" mass extinction as human transformation of the global surface causes the loss of 30,000 species a year. What lies in store for our planet and for ourselves as we enter the 21st century?

Tuesday, December 9 at 7:30 pm (auditorium)

Cost: \$6 members/\$10 non-members

The Mistaken Extinction: Dinosaur Evolution and the Origin of Birds

with Lowell Dingus

Was it the cataclysmic series of volcanic eruptions or the earth-rending crash of a bolide that caused the extinction of earth's most mammoth inhabitants? Lowell Dingus, author of *The Mistaken Extinction: Dinosaur Evolution and the Origin of Birds* will take us on a tour of the leading theories about the dinosaur's disappearance.

This brings us to feathers. Translating the terminology and tools of paleontological detective work as he goes, Dingus will explain why most researchers believe that birds and dinosaurs sprung from the same ancient ancestor.

Lowell Dingus is Research Associate and former Director of the Fossil Halls Renovation at the American Museum of Natural History in New York. His lecture will take place in the auditorium and will be followed by a book-signing.

Tuesday, February 3, 1998 at 7 pm

Cost: \$6 members/\$10 non-members

Investigating Human Evolutionary History

with Bernard Wood

*Presented by the Leakey Foundation and
California Academy of Sciences.*

Fossils and other traces of activity studies by archeologists still provide a great deal of insight into human evolutionary history. In this lecture, Bernard Wood will present the strategies used by scientists to investigate the evolutionary history of modern humans. Wood will survey both traditional and newer methods used to determine the nature of relationships between living organisms. He will also cover the latest evidence about the links between modern humans and the

apes, concentrating on the ways in which we can advance our knowledge of human prehistory,

Bernard Wood is the Luce Professor of Human Origins in the Department of Anthropology at George Washington University. He is also Honorary Senior Scientist at the National Museum of Natural History, the Smithsonian Institution. When he was still a medical student, Wood joined Richard Leakey's first expedition and has remained associated with the research group ever since. His lecture will be preceded by a special reception at 6 pm. This lecture is presented by the Leakey Foundation and California Academy of Sciences.

Thursday, February 19, 1998 at 7 pm (reception 6 pm)

Lecture only: \$6 members/\$10 non-members

Lecture and Reception: \$36 members/\$45 nonmembers

For tickets to these lectures, please use the order form on the back of the newsletter. For more information, call (415) 750-7128.

Rietz Symposium 1998

Food, Health and Healing: An exploration across cultures and through time

All of us at one time have been told, "Eat this, it's good for you!" But what leads us to think that certain foods are good for us? In most cultures, sets of explicit or implicit principles help people to formulate healthy diets. For instance, in many traditions, beliefs about the need to balance the effects of "hot" and "cold" foods guide people's decisions about what to eat. In today's modern industrialized countries, choices about food are influenced by many factors, from the results of the latest scientific research and jargon-laden pseudoscience to highly modified ethnic traditions. These factors indicate that certain foods containing certain healthy substances should be consumed, while those containing various unhealthy ones should be avoided.

In this symposium, we will explore notions concerning food and health across cultures and through time, looking at the diets of early humans to see if there might be an "ideal" human diet shaped by the forces of natural selection. We will then delve into the diets of modern peoples from around the world and examine beliefs about what constitutes good and healthy food in different cultures, and probe the origins of these beliefs. If you have ever wondered why your grandmother made you chicken soup when you had a cold, you will enjoy this event!

Following the symposium, the real party begins. Sample an array of edibles which express different cultures' approaches to health through the appreciation of food. Exhibits, demonstrations and entertainment will round out the day. Please use the order form for tickets, or call Nancy Gee at (415) 750-7163.

Saturday, February 21, 1998 (auditorium)

Symposium: 9 am to 5:30 pm

Tasting party: 5:30 pm

Cost: \$55 members /\$65 non-members

Upon a Midnight Clear

A Concert of Christmas Music Under the Stars

Miramar recording artist Jonn Serrie's electronic music has been heard in many planetaria around the world, on the Discovery, Sci-Fi, and Weather Channels, and in collaboration with Lucasfilm, Ltd and CNN. He has released seven albums, and now turns his talents to a celebration of innocence and joy with delicately designed electronic textures and intricately-woven melodies. Supplemented with planetarium visuals, this performance of traditional holiday music with an ethereal touch is sure to be a heavenly experience!

Tuesday, December 9 at 7:30 pm
\$10 members/\$12 non-members/\$8 children

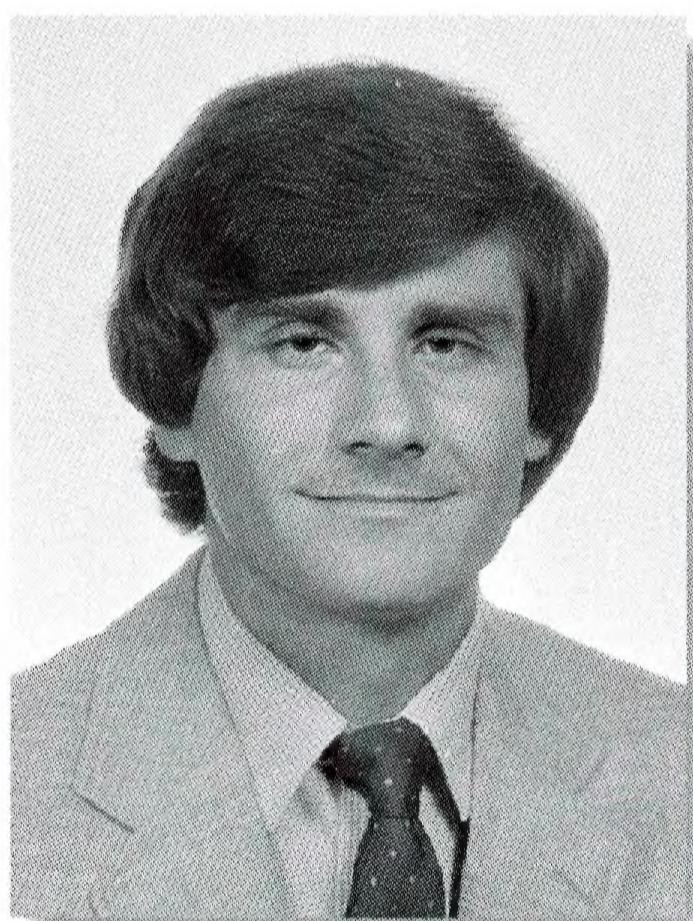
For tickets, please call (415) 750-7127. Remaining tickets will go on sale at the door the evening of the concert.

Benjamin Dean Lecture Series

Violent Stellar Deaths: Explosions, Neutron Stars and Black Holes

with Dr. Alex Filippenko

The Fall 1997 Benjamin Dean Lecture Series on "Stellar Evolution" will conclude with a look at the demise of massive stars. While stars like our sun die rather quietly, giant stars



Dr. Alex Filippenko

literally explode at the end of their lives. These "supernovae" are among the most fascinating and important objects in the Universe, as they create and disperse heavy elements, thereby providing the necessary ingredients for Earth-like planets and life. Supernovae also produce bizarre, dense remnants known as neutron stars and black holes, some of the strangest objects known to science.

Dr. Alex Filippenko from University of California at Berkeley will present an overview of supernovae, giving special attention to Supernova 187A in the Large Magellanic Cloud, the brightest supernova observed in nearly four centuries.

Tuesday, December 16 at 7:30 pm
Tickets \$3 each

The Spring 1998 Benjamin Dean Lecture Series will take us on an armchair tour of the "new" solar system. With new observing techniques and instruments both in space and here on Earth, our views of the planets orbiting our star have greatly improved.

Pluto and Transneptunian Objects

with Dr. Paul Weissman

Our precept of the outermost regions of the solar system has changed radically in the past two decades. Previously, it was believed that the planetary system

"petered-out" beyond the orbit of Neptune. One small, icy planet, Pluto, was thought to inhabit that region. Now we realize that Pluto is simply the largest body in a huge reservoir of comets that orbit the sun beyond Neptune. This cometary reservoir may extend out hundreds of times the mean distance of our Earth to the Sun. The existence of such an area was first suggested by Gerard Kuiper in 1951, so today this region is referred to as the Kuiper Belt.

Dr. Paul Weissman, a Senior Research scientist at the Jet Propulsion Laboratory in Pasadena, CA, is the proposer of the "primordial rubble pile" model of cometary nuclei. Currently he is actively involved in preparations for upcoming space-craft missions to Comet Tempel 1 and Comet Wirtanen. In his talk, he will outline not only what the latest discoveries are, but explain how they provide us with important clues to the processes which formed our planetary system 4.5 billion years ago.

Tuesday, January 20 at 7:30 pm
Tickets: \$3 each

For advance tickets, please use the order form. Tickets are available at the door on a standby basis. Call (415) 750-7141 for additional information.

Upcoming Benjamin Dean Lectures:

February 17: A Geological Tour of Venus with
Dr. Steve Saunders

March 31: A Tour of Jupiter with Dr. Claudia J. Alexander

April 7: The Cassini Project with Dr. Steve Edberg

May 19: The Latest Results from Mars with Dr. Geoffrey Briggs

Adult Education

ArcView

An Introduction to GIS

ArcView is an easy-to-use type of Geographic Information System (GIS) software destined to become as important for business as spreadsheets. With a GIS we can create, store, analyze and display information according to its physical

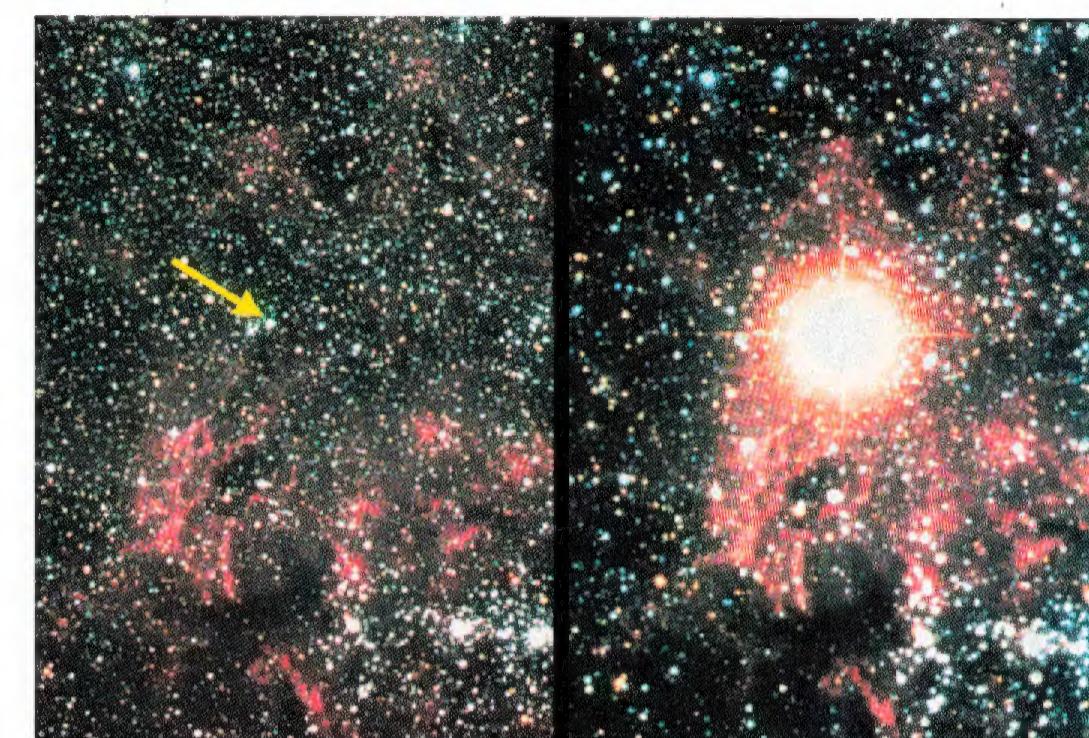


PHOTO: DAVID MALLIN

location. This way we can link the graphics of a map to a related database with more information about what's in the map. For example, the software not only lets us create a map of Golden Gate Park, it lets us link that map to charts comparing the various species of trees in the park.

Sound complicated? Actually, ArcView is so user-friendly that the only prerequisite for this course is familiarity with Windows-based software. Using ArcView, we will look at the ways in which many different companies are taking advantage of this technology for quicker and better decision making. You will receive a copy of "Getting to Know ArcView GIS" and a CD-Rom trial copy of the software with the exercises we will use in class. Also included are two multimedia presentations on GIS and ArcView.

January 24 – February 7, 1998 (3 Saturdays)

9 am to 5 pm

Instructor: Mike Bobbitt

\$225 members/\$250 non-members

Newts of Pepperwood

The wet season is the breeding time for three species of newts at the Academy's Pepperwood Ranch near Santa Rosa. We'll look for clusters of mating rough-skinned newts and their gelatinous egg masses in vernal pools, turn rocks to find red-bellied newts in Franz Creek, and look for other reptiles and amphibians. This wet exploration will be a delightful window into a little-appreciated time of year at Pepperwood.

Saturday, January 10, 1998

10 am to 4 pm

Instructor: Greg de Nevers

\$25 members/\$30 non-members

(transportation not included)

A Glimpse of Ishi's Country

Ishi was the last "Stone Age" Indian of North America and lived with the last of the Yahi tribe hidden in the rugged canyons of Mill and Deer Creeks below Mt. Lassen. In 1911, Ishi was "adopted" by anthropologists at the University of California and he taught them all he could of his people's language and culture. In the spring of 1914, Ishi led these scientists back into his canyons to demonstrate his old ways of life. For 25 years Kurt Rademacher has led groups into these canyons. In this presentation, he will review the Ishi story and share from his adventures with slides of Yahi village sites, the sampling of native food plants and starting fire by friction. Chia seed and wild mint tea will be served.

Thursday, February 5, 1998

7 to 9 pm

Instructor: Kurt Rademacher

\$15 members/\$18 non-members

To register and for more information about these and other classes, use the order form or contact the adult and family education program at (415) 750-7100.

The Wildlife Talks: From Mountain Peaks to Coral Reefs

Presented by Wildlife Conservation Society and California Academy of Sciences

The Year of the Tiger: Demystifying the Tiger Crisis

with Joshua Ginsberg

Will the tiger see the next millennium? The largest feline holder of praise and fear still roams wild throughout Asia, but how many and for how long? Dr. Joshua Ginsberg, Director of WCS's Asia Program, will present WCS's Indochinese program. Society scientists are actively working in Southeast Asia from Thailand and Laos to Malaysia and Cambodia to uncover the status of one of the remaining five sub-species of tiger. Through field research, trans-boundary agreements and local training, WCS is working to create realistic and effective management plans to ensure the tiger's future.

The talk begins at 7:30 pm in the auditorium. A reception will precede the lecture at 6:30 pm. Please use the order form for tickets.

Thursday, January 29 at 7:30 pm (6:30 pm reception)

Lecture only: \$6 members/\$10 nonmembers

Lecture and reception: \$36 members/\$45 nonmembers

Upcoming Talks

The Degradation and Restoration of Coral Reefs with Tim McClanahan

Coral reefs around the world are rapidly being degraded by misuse and overuse. Even the most remote reefs are experiencing dramatic changes that threaten their ecological services and biological diversity.



Tropical fish that live among coral polyps are an integral part of any reef system. Overfishing has upset that balance in some areas, and protection measures have been put in place to rebuild fish populations.

PHOTO: J. CARTER

In his talk, Dr. McClanahan will outline the history of the global problem using dramatic slides of the Indian Ocean and Caribbean to show the causes of the problem, and will discuss possible solutions to restore and conserve coral reefs.

Thursday, April 9, 1998

Dry Forest to Rain Forest: Wildlife Conservation in Bolivia

with Dr. Andrew Taber

Located practically in South America's geographic center, Bolivia contains an extraordinary diversity of habitats and wildlife. To the North are Amazonian tropical rain forests, rich in primates, parrots and macaws. To the south is the Gran Chaco, a veritable sea of dry, thorny forest, cactus, jaguar, peccaries and armadillos. To the east are swamp lands with a host of water birds and caiman, and to the west are the Andes Mountains, home to spectacled bears. One of WCS's greatest conservation achievements is the creation of the eight-million acre Kaa-Iya Gran Chaco National Park. The park is four times the size of Yellowstone, and contains some 80 species of mammals, including the rare Chacoan peccary, thought extinct until rediscovered in 1975.

Dr. Taber will present this veritable zoologist's heaven and discuss how it blends the needs of its wildlife and the indigenous people who have called the Chaco home for centuries.

Thursday, June 4, 1998

The Wildlife Talks Pricing:

For Lecture only

Member: \$6 per lecture/\$18 for the series
Nonmember: \$10 per lecture/\$30 for the series

For Lecture and Reception

Member: \$36 per lecture/reception/\$100 for the series
Non-Member: \$45 per lecture/reception/\$145 for the series

The Wildlife Talks lecture series is co-sponsored by California Academy of Sciences and the Wildlife Conservation Society. For tickets, please use the order form. For more information, please call (415) 750-7128 or visit the Wildlife Conservation Society website at www.wcs.org.

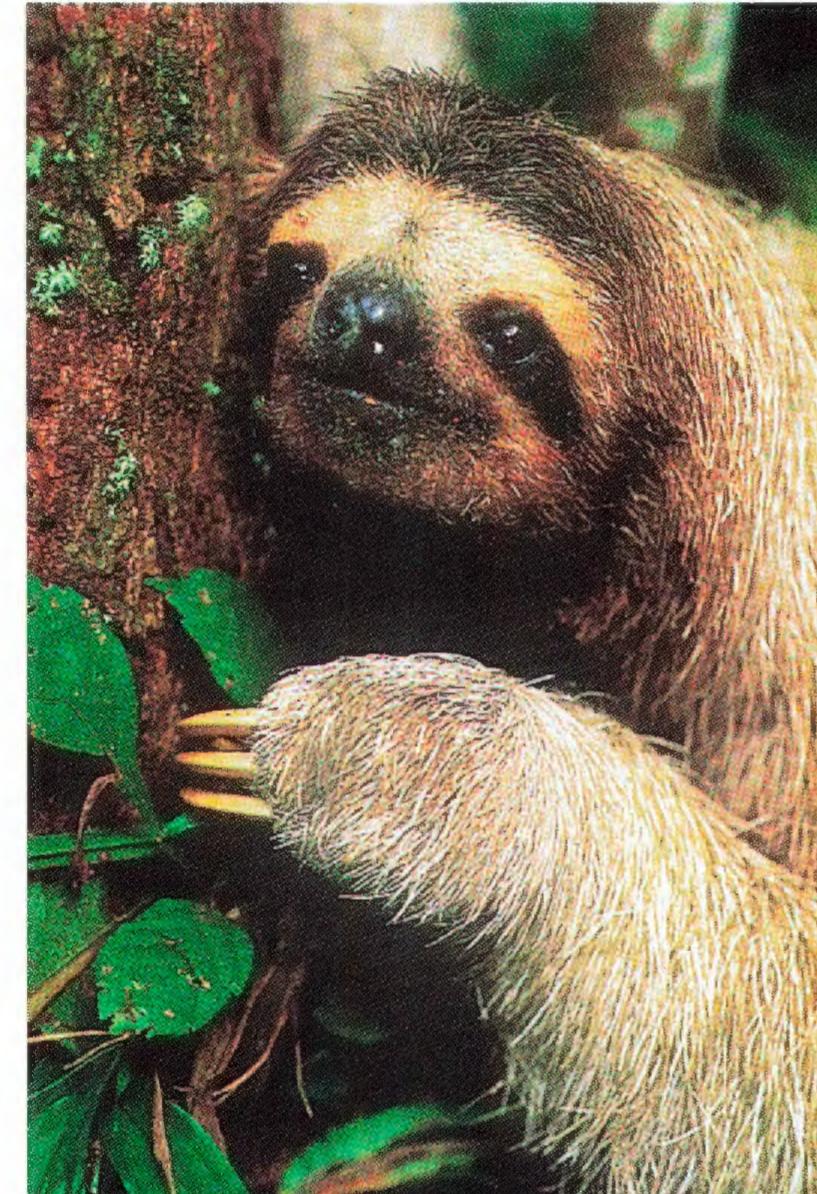


PHOTO: ART WOLFFE

Three toed sloths are among the thousands of species protected by the Bolivia's Grand Chaco National

BioForum

For High School Science Teachers

BioForum is funded in part by: Genentech, Inc.; ALZA Corporation in honor of Rudy A. Peterson; and Dr. and Mrs. John S. Hensill.

The California Academy of Sciences' BioForum, now in its thirteenth year, provides information on current research issues to high school teachers in a setting that allows teachers to interact directly with scientists.

Each BioForum features lectures by four scientists and is followed by a panel discussion. This fall, teachers can take BioForum back to class via the Academy's website at <http://www.calacademy.org>.

Advances in Deep Sea Biology

Saturday, February 7, 1998

Moderator: Bruce H. Robison, Ph.D., Senior Scientist, Monterey Bay Aquarium Research Institute

Theoretical Issues in Plant Biology

Saturday, April 18, 1998

Moderator: Frank Almeda, Ph.D., McAllister Chair and Senior Curator of Botany, California Academy of Sciences

Time: 8:30 am to 4 pm

Location: auditorium

Registration: \$15.00 for each BioForum

Morning refreshments and lunch are included.

San Francisco State University Continuing Education Credits will be available. Most school districts accept this program for increment credits.

To Register, call the Education Department at (415)750-7368 or E-mail: klundstrom@calacademy.org

Young Audiences of the Bay Area

Young Audiences of the Bay Area is delighted to present a Sunday series of art performances for families and children in the Academy's auditorium. Founded in 1958, Young Audiences of the Bay Area is the region's oldest and largest arts education organization whose mission is to make the arts—classical, contemporary and multicultural—an essential part of every young person's education and life.

Family Affair

Celebrate Kwanzaa with Family Affair!

Kwanzaa is a spiritual, festive and joyous celebration of the oneness and goodness of life.

Visitors will learn the *Nguzo Saba* (the Seven Principles),



Family Affair

Morrison Planetarium

The Academy's Morrison Planetarium, now 45 years old, offers a variety of multimedia astronomy presentations to suit a wide range of ages and interests. Each show is presented by a lecturer who is more than happy to answer questions about astronomy after the show.

Sky Shows

The Christmas Star

Part of the Academy's Yuletide celebration is this annual family favorite. Explore the wonders of the winter sky, where you can see stars at different stages of their lives. Then, delve into the mystery behind one of the oldest and most powerful symbols of Christmas. Could the legendary "Star of Bethlehem" have been a real astronomical object? If so, what possibilities does science suggest? This is the Planetarium's main feature and is shown daily.

Great Shakes!

On weekends, this show continues rattling audiences with a look at the forces which cause earthquakes, moonquakes, Marsquakes and starquakes.

Neighbors in Space

This tour of the solar system system features Moon Mouse and is ideal for kids and their families. Neighbors in Space is offered on weekends, Free Wednesdays, and during certain holiday periods.

Startalk

This is a live, freeform show in which a Planetarium lecturer guides audiences through the constellations. Startalk is offered on weekends, Free Wednesdays, and during certain holiday periods.

1998 Almanac

On January 9th, kick off the new year with this sneak peek at the year's most notable celestial events, including planetary configurations, the continued exploration of Mars, a Caribbean eclipse and a possible firestorm in the sky. The Almanac show series has become an audience favorite!

Members: Please remember to redeem your complimentary Planetarium passes at the Planetarium Box Office, and arrive early for the best choice of seats.

Amateur Astronomers

On the third Wednesday of each month at 8 pm, Morrison Planetarium hosts the regular meetings of the **San Francisco Amateur Astronomers**. These meetings are free and open to the public, featuring non-technical talks about astronomy. They're also a great opportunity to talk with other amateur astronomers about stargazing and telescopes. For more information, call the SFAA at (415) 566-0587.

December/January Sky Show Schedule

Sky Show Weekday Weekend

December 1-4

The Planetarium is closed due to changing to The Christmas Star.

December 5-28

The Planetarium is closed on Christmas Day.

The Christmas Star ending date: January 4, 1998	2 pm	2 & 4 pm
Great Shakes! ending date: June 14, 1998		1 & 3 pm
Startalk no ending date		12 pm
Neighbors in Space no ending date		11 am

December 29-31

The Christmas Star ending date: January 4, 1998	2 pm	2 & 4 pm
Great Shakes! ending date: June 14, 1998	3:30 pm	1 & 3 pm
Startalk no ending date	12:30 pm	12 pm
Neighbors in Space no ending date	11 am	11 am

January 1-4, 1998

The Planetarium will offer the Weekend Sky Show Schedule on New Year's Day.

The Christmas Star ending date: January 4, 1998	2 pm	2 & 4 pm
Great Shakes! ending date: June 14, 1998		1 & 3 pm
Startalk no ending date		12 pm
Neighbors in Space no ending date		11 am

January 5-8, 1998

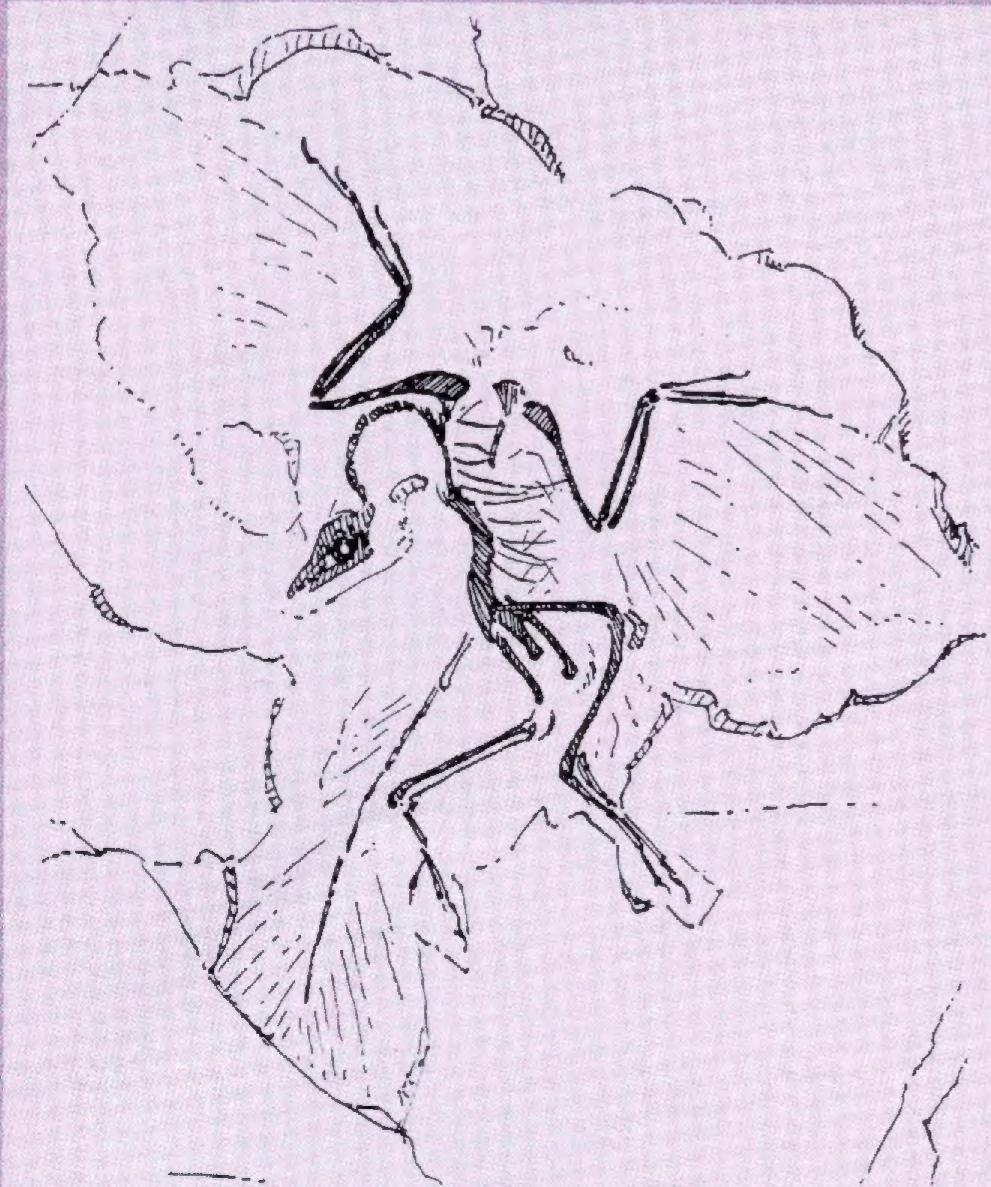
The Planetarium will be closed due to changing to 1998 Almanac.

1998 Almanac ending date: March 8, 1998	2 pm	2 & 4 pm
Great Shakes! ending date: June 14, 1998		1 & 3 pm
Startalk no ending date		12 pm
Neighbors in Space no ending date		11 am

Complete the drawings of the Allosaurus and Sabre-toothed Tiger skulls by giving them sharp teeth to eat meat.



Archaeopteryx is a fossil with feathers. Can you name a living relative of this dinosaur?



Answer: Birds are living relatives of the Archaeopteryx.

To celebrate the Winter Holidays...

Join the fun at the Junior Academy's Winter Holiday Workshops, offered December 22-31

Winter Solstice

Why is it colder in winter than other times of the year? Come on in to the StarLab planetarium and follow the path of the sun throughout the year to understand the seasons, and discover exactly what we mean by “solstice.” Along the way, we’ll uncover many of the holidays that are inspired by the winter solstice and learn the bright stars of the winter sky.

Instructor: Tinka Ross

Ages 6-8 years: Monday, December 22 from 1 to 3 pm; \$20

Worms

Meet some important animals that live beneath your feet. You'll examine worms under microscopes, study their anatomy and learn about their valuable role as decomposers. You'll also build a worm compost bin and bring two of your friends home to start recycling.

Instructor: Nicole Anderson Ellis

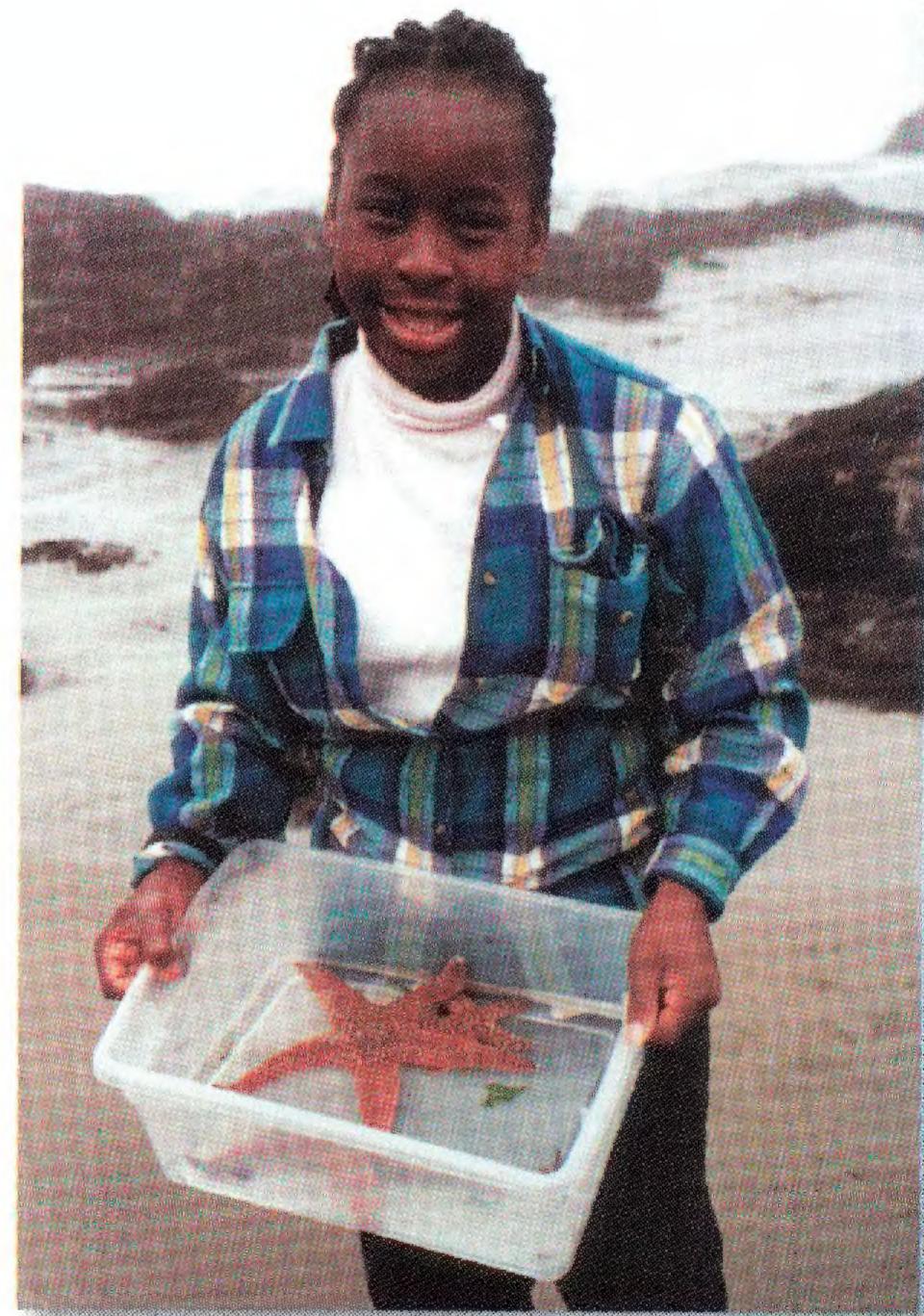
Ages 9-12: Tuesday, December 23 from 9 am to noon; \$25

Ages 6-8: Wednesday, December 31 from 1 to 3 pm; \$20

Living on the Edge

Discover the strange and amazing animals that live in tidepools along our rocky coast. On this day, the moon will pull the tides far out to reveal fascinating organisms. Join us as we explore life at the edge of the sea at the Fitzgerald Marine Preserve in San Mateo County.

Instructor: Jack Laws
Ages 10-16; Monday,
December 29 from
1 to 6 pm; \$30
Transportation
included



Chika Emeka explores life forms at the tidepools.

For current availability of these and other Winter Holiday Workshops, please call 750-7100. To register via fax, please use the order form in the back of the newsletter.

On our Cover

A male *Hyperolius Argus*, which belongs to one of the largest groups of tree frogs found in East Africa. See Herpetology pg. 5. Photo: Jens Vindum

The Oct./Nov. issue of Academy featured a magnificent diatom, a single celled algae with a glass shell.

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Order Form

Your Name: _____
 Address _____ City _____
 State _____ Zip _____ Member # _____

ADULT EDUCATION Qty/Members

ArcView/Jan 24-Feb. 7	____ X \$225	____ X \$250	= _____
Newts of Pepperwood/Jan. 10	____ X \$25	____ X \$30	= _____
A Glimpse of Ishi's Country/ Feb. 5	____ X \$15	____ X \$18	= _____

B. DEAN LECTURE SERIES Quantity

Violent Stellar Deaths/Dec. 16	____ X \$3	= _____
Pluto and Transneptunian Objects/Jan. 20	____ X \$3	= _____

JUNIOR ACADEMY Quantity

Please call (415) 750-7100 for class availability.

Winter Holiday Workshops:

Winter Solstice/Dec. 22	____ X \$20 (ages 6-8)	= _____
Worms/Dec. 31	____ X \$20 (ages 6-8)	= _____
Worms/Dec. 23	____ X \$25 (ages 9-12)	= _____
Living on the Edge/Dec. 29	____ X \$30 (ages 10-16)	= _____

SPECIAL LECTURES Qty/Members

The Sixth Extinction/Dec. 9	____ X \$6	____ X \$10	= _____
The Mistaken Extinction/Feb. 3	____ X \$6	____ X \$10	= _____
Investigating Human Evolutionary History/Feb. 19			
lecture only	____ X \$6	____ X 10	
lecture and reception	____ X \$36	____ X \$45	

THE WILDLIFE TALKS Qty/Members

The Year of the Tiger/Jan. 29			
lecture only	____ X \$6	____ X \$10	= _____
lecture series	____ X \$18	____ X \$30	= _____
lecture and reception	____ X \$36	____ X \$45	= _____
lecture and reception series	____ X \$100	____ X \$145	= _____

RIETZ SYMPOSIUM 1998 Qty/Members

Food, Health and Healing/Feb. 21	____ X \$55	____ X \$65	= _____
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DONATIONS

I would like to support the Academy of Sciences with a donation. \$ _____
 Please send me information about life income gifts and bequests to the Academy

TWO-FOR-ONE GIFT MEMBERSHIP FORM

\$60 Family or Grandparent

I wish to give a gift membership to: _____

Address _____ City _____

State _____ Zip _____ Phone () _____

I wish to give a gift membership to: _____

Address _____ City _____

State _____ Zip _____ Phone () _____

Payment enclosed: _____

TOTAL PAYMENT ENCLOSED \$ _____ Check (made payable to CAS)

Visa Mastercard American Express (\$10 minimum on credit card orders)

Card Number _____ Exp. Date _____

Daytime Phone _____

Mail payment and order form to: Membership Office, Ticket Services, California Academy of Sciences, Golden Gate Park, San Francisco, CA 94118-4599.

Include a self-addressed, stamped envelope for each series to which you subscribe.

No refunds/exchanges.



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ACADEMY STORE

Holiday Gifts

The Academy Store buyers have searched the universe to bring you the treasures of the natural world just in time for gift giving. You can find books, jewelry, toys and gifts from the depths of the sea, the wonders of space and around the globe, everywhere from \$1 to \$1,000. For example, individually handwoven fabric animals from Sri Lanka are made to last a lifetime and are priced from \$24 to \$40.

Members: You will receive an extra 10% off Academy Store jewelry for the month of December. Present your membership card at time of purchase. Thank you for your patronage throughout the year, and Happy Holidays!

Members Notes

The Joy of Giving

Two Memberships for the Price of One! Buy one membership at the \$60 level, Family or Grandparent, and the second one is FREE (first-time members only, no renewals).

Membership is an inspiring gift that opens doors to the natural world for everyone on your holiday list—friends, relatives, business colleagues, or the young people in your life.

Use the two gift order forms. We'll handle all the details. If we can assist you, call us at (415) 750-7111 during business hours, Monday through Friday from 9 to 5 pm.

Gifts for Groups

This holiday season, give your favorite social agency or non-profit organization a Group Membership. For \$250 per year, Group Members are offered unlimited access to the Academy for up to eight individuals, a subscription to Academy and *California Wild* magazine, 36 Planetarium passes, discounts on adult classes, and special lectures. Call the Membership office for further information at (415) 750-7111.

Hard Rock Cafe Offer

The Academy is extremely pleased and proud to announce that the world-renowned Hard Rock Cafe has a special offer for Academy members when they show their membership card: priority seating for up to 4 people, plus a free appetizer. Valid one per group. Expires June 30, 1998.

Many, many thanks to the following members who have upgraded to a higher category during the Fall of 1998:

Mr. Richard Alward
Mr. James Baker
Mr. James Barbour
Mr. & Mrs. A. William Barkan
Mr. & Mrs. Joseph Cardenas
Dr. Ben Colloff
Mr. Thomas Cutillo & Ms. Priscilla Myrick
Mrs. Barbara Dales
Lenora Eagar Davis
Professor Jean Louis Davrainville
Mr. & Mrs. Donald Dixon
Mr. & Mrs. Morris Doyle
Mr. & Mrs. Robert Feldman

Mr. Tully Friedman
David & Lisa Gruber
Mr. & Mrs. James Heagy
Mr. Stephen Hoffman
Mr. Stanley Kubu
Ms. Laura Mattos
Mr. & Mrs. Mike McCune
Mr. William Michale & Ms. Jancy Richman
Mr. & Mrs. Jeffrey Morris
Ms. Diane Ososke
Mr. John Owings & Ms. Elizabeth Dishrow
Deborah Robbins
Dr. Christina Shin & Dr. Bradley Maring

Southern Africa's Greatest Rail Journey: An Exclusive Look at a Fast-Changing Land

April 12-26, 1998

with Dr. Robert Drewes
Chair and Curator of Herpetology

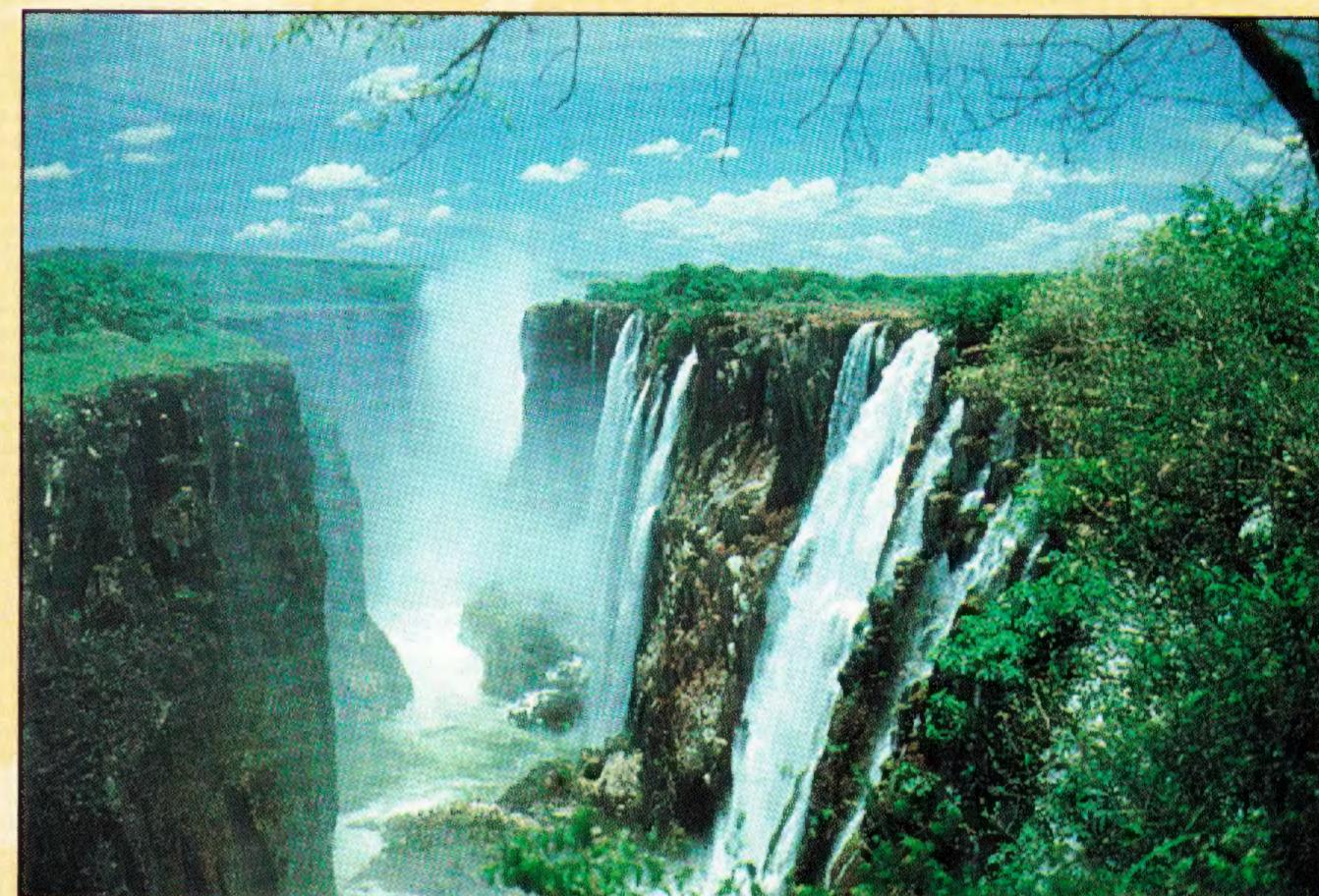


PHOTO: COURTESY OF BOB DREWES

A fabuous opportunity to experience South Africa's biodiversity and cultural heritage awaits you on this most luxurious and extraordinary Rovos Rail trip. The journey begins with a four-night stay in Cape Town. Cradled at the base of Table Mountain, Cape Town boasts one of the most dramatic settings in the world. Travelers will enjoy ample time to explore the highlights of the city, and Bob Drewes will guide you through the exquisite environs of Cape Town, Table Mountain, Stellenbosch and the Cape Nature Reserve's fynbos habitat. You will also visit Boulder Beach, the only mainland breeding colony of South Africa penguins.

From Cape Town, you embark on a five-night journey aboard the Rovos Rail to Victoria Falls. En route, you will cross the Great Karoo, one of the world's famous fossil sites.

Upon arrival in Victoria Falls, you will be driven directly to Chobe National Park, widely known as an outstanding preserve for game viewing, and among the best in all of southern Africa.

Your privately chartered train consists of twelve coaches which can be drawn by any of three vintage locomotives, operating at various stages of the journey. Each wood-paneled compartment has been splendidly refurbished in the style of the period with modern conveniences such as air conditioning, en-suite bathrooms and comfortable beds. Complimentary bar service is provided throughout your stay, and meals feature the finest provisions including internationally-recognized wines.

Cost: \$9,670 per person (based on double occupancy) + airfare

**For a detailed itinerary on this tour, please call
Deidre Kernan or Bonnie Frey at (415) 750-7348.**

December

1 Monday - **4** Thursday

Planetarium closed for
Sky Show installation

5 Friday

Planetarium reopens with
The Christmas Star Sky Show

6 Saturday

American String Band
1 pm
(Traditional Arts)

Birds of a Feather Opens

9 Tuesday

The Sixth Extinction
7:30 pm
(Special Lecture)

Upon a Midnight Clear
7:30 pm
(Planetarium Christmas Concert)

10 Wednesday

Members' Holiday
Shopping Evening
6 to 9 pm

The Search for Extraterrestrials
2 pm & 7:30 pm
(Members' Meeting)

13 Saturday

Kwanzaa Celebration
1 pm
(Traditional Arts)

German Brass Band
2:30 pm
(Traditional Arts)

14 Sunday

Musical performance with
Family Affair
1 pm
(Young Audiences)

16 Tuesday

Violent Stellar Deaths
7:30 pm
(B. Dean lecture)

22 Monday

Winter Solstice
1-3 pm
Junior Academy

23 Tuesday

Worms
9 am - Noon
Junior Academy

25 Christmas Day

California Academy of
Sciences is **open**
(No Sky Shows)

29 Monday

On the Edge
1-6 pm
Junior Academy

31 Wednesday

Worms
1-3 pm
Junior Academy

January

1 New Year's Day

Weekend Sky Show schedule
in effect for Planetarium.

5 Monday - **8** Thursday

Planetarium closed for
Sky Show installation

9 Friday

Planetarium reopens with
1998 Almanac Sky Show

10 Saturday

News of Pepperwood
10 am - 4 pm

13 Tuesday

Underwater World
2 pm & 7:30 pm
(Members' Meeting)

17 Saturday

Japanese Storytelling
1 pm
(Traditional Arts)

18 Sunday

Gina Pacalda with
Dance and Storytelling
1 pm
(Young Audiences)

19 Monday

Martin Luther King, Jr. Day
Weekend Sky Show schedule
in effect for Planetarium

20 Tuesday

Pluto and Transneptunian Objects
7:30 pm
(B. Dean lecture)

24 Saturday

Scottish Pipe Band
1 pm
(Traditional Arts)

ArcView: An Introduction to GIS
9 am - 5 pm

29 Thursday

The Year of the Tiger
7:30 pm (6:30 pm reception)
(The Wildlife Talks)

31 Saturday

The Art of Illusion
1 pm
(Traditional Arts)

VISITOR INFORMATION

Special Exhibitions:

Amazon: *The Watercolors*
of Margaret Mee
through January 4

Birds of a Feather
December 6 - February 22

Feeding Times:
Fish Roundabout, 2 pm
Penguins, 11:30 am & 4 pm

Guided Tours:
Free one-hour highlight tours
daily

Laserium Shows:
Thu.-Sun. evenings

Free Day:
First Wed. of each month

Open every day of the year.

Winter hours - 10 am - 5 pm

Summer hours (Memorial Day
weekend to Labor Day)
9 am - 6 pm

Information Hotline:
(415) 750-7145

World Wide Website:
www.calacademy.org

Whom to Call:

Academy Info: 750-7145

Academy Store: 750-7410

Aquarium: 750-7247

Biodiversity Center: 750-7361

Development: 750-7216

Docent Tours: 750-7155

Education: 750-7100

Group Admissions: 750-7159

Job Hotline: 750-7333

Laserium: 750-7138

Special Lectures: 750-7128

Library: 750-7102

Marketing: 750-7392

Membership: 750-7111

Planetarium: 750-7141

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Weekend Information:

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